We Claim:

1. A method for detecting an analyte in a sample, comprising:

providing a suspension of colloidal particles, wherein said particles are associated with a ligand that binds to said analyte, and wherein said colloidal particles are near a dynamical phase transition state;

contacting said suspension with said sample; and

determining whether said colloidal particles transition from a first phase to a second phase, wherein such transition is indicative of said analyte being present in said sample.

2. The method of Claim 1, wherein said colloidal particles comprise a lipid layer.

3. The method of Claim 2, wherein said lipid layer comprises a lipid bilayer.

4. The method of Claim 3, wherein said lipid bilayer comprises a natural cell membrane.

5. The method of Claim 3, wherein said lipid bilayer comprises an artificial cell membrane.

6. The method of Claim 1, wherein said colloidal particles are covalently linked to said ligand.

7. The method of Claim 1, wherein said ligand is non-covalently linked to said colloidal particles.

8. The method of Claim 1, wherein said ligand is interspersed within a lipid layer on said colloidal particles.

9. The method of Claim 1, wherein said colloidal particles have a net negative charge or a net neutral charge.

10. The method of Claim 1, wherein said analyte is selected from the group consisting of: a protein, a nucleic acid, an antibody, an antigen, a receptor, a virus, and a bacteria.

11. The method of Claim 1, wherein determining whether said colloidal particles transition from a first phase to a second phase comprises measuring the distances between centers of said colloidal particles in said suspension.

12. The method of Claim 1, wherein said colloidal particles are between 1μm and 10μm

13. The method of Claim 1, wherein said first phase is a condensed phase and said second phase is a dispersed phase.

14. The method of Claim 1, wherein said first phase is a dispersed phase and said second phase is a condensed phase.

15. The method of Claim 1, wherein said suspension of colloidal particles comprises a first population of colloidal particles and a second population of colloidal particles.

16. The method of Claim 15, wherein said first population comprises colloidal particles that are larger than the colloidal particles in said second population.

17. The method of Claim 15, wherein said first population comprises colloidal particles that are labeled differently than the colloidal particles in said second population.

18. An assay system for detecting the binding of an analyte to a ligand, comprising:

a suspension of colloidal particles, wherein said colloidal particles are near a dynamical phase transition state;

a ligand associated with said particles and specific for said analyte; and

a device configured to determine if said colloidal particles transition from a first phase to a second phase when contacted by said analyte, wherein such transition is indicative of said analyte being bound to said ligand.

19. The assay system of Claim 18, wherein said suspension of colloidal particles comprises a first population of colloidal particles and a second population of colloidal particles.

20. The assay system of Claim 19, wherein said first population comprises colloidal particles that are larger than the colloidal particles in said second population.

21. The assay system of Claim 19, wherein said first population comprises colloidal particles that are labeled differently than the colloidal particles in said second population.

22. The assay system of Claim 18, wherein said colloidal particles comprise a lipid layer.

23. The assay system of Claim 22, wherein said lipid layer comprises a natural cell membrane.

24. The assay system of Claim 18, wherein said colloidal particles are covalently linked to said ligand.

25. The assay system of Claim 18, wherein said ligand is non-covalently linked to said colloidal particles.

26. The assay system of Claim 18, wherein said first phase is a condensed phase and said second phase is a dispersed phase.

27. The assay system of Claim 18, wherein said first phase is a dispersed phase and said second phase is a condensed phase.

28. An assay system for detecting the binding of an analyte to a ligand, comprising:

a suspension of colloidal particles, wherein said particles are coated with a lipid layer, and wherein said particles are near a dynamical phase transition state;

a ligand associated with said lipid layer, wherein said ligand is specific for said analyte; and

means for detecting if said colloidal particles transition from a first phase to a second phase when contacted by said analyte, wherein such transition is indicative of said analyte being bound to said ligand.

29. The assay system of Claim 28, wherein said means for detecting comprises a microscope.

30. The assay system of Claim 28, wherein said means for detecting comprises a florescence detector.

31. The assay system of Claim 28, wherein said lipid layer comprises a natural cell membrane.

32. The assay system of Claim 28, wherein said ligand is non-covalently linked to said lipid layer.